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The issuance of this publication approved by the Secretary of the Navy on 28 June 1961.



Pathologic and Physiologic Studies of Welders' Siderosis \*

William Keith C. Morgan MD, MRCP E, and H. David Kerr MD,  
Baltimore, Md. Ann Intern Med 58: 293-304, February 1963.

Iron is melted and boiled during the welding process by the heat of the electric arc or oxyacetylene torch and is emitted as blue-grey fumes which are immediately oxidized to ferric oxide. Prolonged inhalation of these fumes, particularly if ventilation is inadequate, frequently produces radiologic changes in the lungs. Since its original description, welders' siderosis has been generally assumed to be benign and not associated with respiratory symptoms. The bases for this assumption are: (1) the published statistics of mortality and morbidity in the United States and Great Britain; (2) the absence of permanent sequelae from the acute pneumonic process that has been stated to occur more frequently in welders than in the general population; and (3) the lack of fibrosis in the lungs of asymptomatic welders despite the presence of large quantities of iron in their lung parenchyma.

By way of contrast, there have been several reports of subjects with welders' siderosis who have had both respiratory symptoms and severe impairment of lung function; however, no definite cause and effect relationship was established between the occupation of the subject and his disability. In several of these symptomatic subjects, histologic examination of the lungs has demonstrated marked fibrosis and, not infrequently, emphysema. This fibrosis has not been attributed to the inhalation of iron, but rather to the coincident inhalation of other substances found in the welding fumes. These are present either in the electrode or in the metal being welded, and among them are carbon, manganese, titanium, aluminum, various silicates, and a fair quantity of free silica.

Granted that it is possible for fibrogenic substances to be inhaled during the welding process—and it is emphasized that iron is not included in this category—is it correct to assume that any respiratory disability found in welders can be attributed to these substances? Because of the obvious medicolegal aspects and the occasional tendency to award compensation on the grounds of suspicion rather than proof, it is important to decide whether respiratory disability can be an occupational hazard of welding and, if so, under what circumstances. In an attempt to shed some light on this question, the authors obtained detailed pulmonary function studies in seven subjects with welders' siderosis. Lung biopsies were obtained from four subjects. The authors' approach to the problem has been based on studies which would correlate defects in respiratory function with the known pathophysiologic effects produced by the inhalation of various dusts. The authors describe materials and methods, and present six interesting photomicrographs of lung tissue.

\* From the University of Maryland School of Medicine, Division of Pulmonary Diseases, Baltimore 1, Md. Most of this material was presented at the meeting of the American Thoracic Society, Miami, Fla., May 1962.

Although several subjects in this series were shown to have abnormalities of pulmonary function, the evidence available suggested that welding probably played no part in their development. Moreover, it was shown that the deposition of large quantities of iron in the lung parenchyma was not associated with pulmonary fibrosis. It is felt that welding has not yet been shown to produce permanent respiratory impairment and that the only hazard associated with this occupation is a form of metal fume fever. When respiratory disability is found in a welder, the chances are that either he has coincident obstructive airway disease or he has been exposed at some time to other agents known to produce occupational lung disease.

\* \* \* \* \*

### Pregnancy Anemia

Leading Article, The Lancet, No. 7276, Vol. 1 for 1963, 309-310.

It is now usual to check the blood count during pregnancy in the knowledge that some degree of anemia is common and should be remedied; some have argued that such anemia could be prevented by giving hematinic drugs regularly to all pregnant women. There are two objections to this suggestion: first, in "affluent societies" there should be no need for routine mass treatment of alleged deficiencies unless something is quite wrong with methods of dieting since pregnancy is a physiologic process; also, it is uncertain whether the observed changes in the blood do, in fact, indicate anemia in the sense that there is insufficient hemoglobin to carry oxygen to the tissues. Anemia in pregnancy has been discussed once again at the British Congress of Obstetrics and Gynecology held in Bristol in July 1962 and in other reports.

Witts draws attention to some of the problems. During pregnancy, both plasma and red cell volumes increase, but the plasma volume increases more than the red cell volume: Witts cites figures showing that "while the total hemoglobin mass increases on the average from 550 Gm at the beginning of pregnancy to 725 Gm in the seventh month, the hemoglobin concentration drops over the same period from 13.4 to 11.6 Gm%." At what level of hemoglobin concentration can anemia be presumed to be present? Another question is posed by what Witts calls the pharmacologic action of iron: if iron is given to pregnant women and their hemoglobin level rises, they are usually assumed to have been deficient in iron; but Witts points out that iron in therapeutic doses stimulates erythropoiesis and can cause the hemoglobin level to rise in the non-anemic. Nevertheless, much evidence points to a high frequency of undeniable iron deficiency in pregnancy. A survey of women aged 15 to 44 in a rural population in England showed that a quarter of them had a hemoglobin level of less than 12.0 Gm per 100 ml; and study of marrow smears for iron and of serum-iron levels showed deficiency in 11 of 12 women. Work in Witts' department has shown that iron stores are commonly inadequate even in women with hemoglobin over 12 Gm per 100 ml. There seems to be good reason for prescribing iron for any pregnant woman whose hemoglobin level falls below 12.0 Gm per 100 ml (82%). Yet another problem is megaloblastic anemia in pregnancy:



Giles and Shuttleworth, in Stoke-on-Trent, reported that this had an incidence of 2.8%. In England, such anemia is almost always due to folic acid deficiency; and folic acid clearance studies have indicated increased clearance of folic acid from the plasma as early as the 12th week of pregnancy, though clearance is maximal in the last 3 weeks. These findings suggest that megaloblastic anemia occurs in pregnancy because the mother's stores of folic acid, together with what she absorbs from food, are inadequate for both the fetus and herself. But Witts points out that the daily minimum requirement of folic acid is very small (of the order of 5  $\mu$ g) and large doses of folic acid (20 mg daily intramuscularly) are known to be needed to reverse megaloblastic anemia. These facts suggest an unusual resistance to folic acid rather than a simple deficiency. There is some evidence that prophylactic administration of folic acid can greatly reduce the incidence of megaloblastic anemia in pregnancy, but there is little point in giving the folic acid before the 6th month since only 4% of cases are diagnosed before the 30th week. Witts believes that the risk of provoking neurologic changes in an undiagnosed case of pernicious anemia is not great.

Paintin has studied changes in the total red cell volume in 26 primigravidae with uncomplicated pregnancies: in late pregnancy an increased total red cell volume was found in 14, while, rather surprisingly, a decrease was recorded in the remaining 6 of whom 2 showed some evidence of iron deficiency. The mean hemoglobin concentration of the entire group fell to a minimum of 11.0 Gm per 100 ml at the 29th week and changed little thereafter. Plasma volumes rose, as expected, the mean value showing a 30% increase between the 12th and 37th week. Paintin concludes that "hemoglobin concentration may, after all, be a better index of anemia" than the total red cell volume, and that anemia should be diagnosed if the hemoglobin falls below 10.1 Gm per 100 ml (69%) from the 28th week onward.

Solomons et al, in New York, used serum-folic-acid assays to assess the changes during pregnancy and relate them to the incidence of megaloblastic anemia. They confirmed that folic acid levels below the accepted normal were common in the third trimester of pregnancy, especially among the underprivileged; but megaloblastic anemia was rare and unrelated to the degree of folic acid deficiency. They conclude that some factor besides folic acid deficiency must be involved. Hibbard found excretion of formiminoglutamic acid (FIGLU) a useful screening test for folic acid deficiency in pregnancy: of 157 women tested, 83 gave normal results and had normoblastic marrow; 54 excreted FIGLU in excess and were found to have megaloblastic marrow; the remaining 20 had excess FIGLU in the urine with normoblastic marrow, but their anemia resolved and FIGLU disappeared from the urine when folic acid was administered. Lewis et al describe a simplified form of the FIGLU test in which histidine loading was not needed; but this method seems to give many more false positives than the usual technic.

Lawrence reexamined the methods used for determining the iron status in pregnancy and concluded that this could be best assessed by estimating the serum-iron concentration and examining a marrow smear for stainable iron; the mean corpuscular hemoglobin concentration and the appearance of stained



red cells were relatively insensitive indicators. He draws attention to the condition in which the hemoglobin level was reduced below 12 Gm per 100 ml but tests showed an iron-sufficient state. Such patients have an unusually large increase of blood volume and, therefore, treatment by blood transfusion should be avoided; nor is there any point in giving them parenteral iron injections since they are not iron deficient. Lawrence, like Paintin, considers that a hemoglobin level below 10 Gm per 100 ml (70%) denotes anemia.

Giles and Brown have pointed to the frequency of urinary infection in pregnancy and the retarding effect of this infection on response of anemia to treatment: often the patient's infection gives rise to no symptoms and is detected only when specifically sought. Urinary infection was found to be twice as common among anemic patients as among others, *Escherichia coli* being, as usual, the commonest infecting organism. Antibacterial drugs cleared the infection in 30 of 56 patients, and in 26 of these 30, there was a concomitant rise in hemoglobin level.

Dawson has attempted to introduce some order into the difficult matter of diagnosing early megaloblastic changes in bone marrow smears from pregnant women. He examined 150 smears from pregnant and postpartum women and classified the findings into four groups: group I were normoblastic; group II were normoblastic with some giant metamyelocytes or 1% or more of Howell-Jolly bodies in intermediate or late erythroblasts; group III comprised those with a transitional megaloblastic picture; and group IV were typically megaloblastic. Of the 150 smears, 39 were in group I, 33 in group II, 45 in group III, and 34 in group IV; Dawson says that cases in groups III and IV are obviously megaloblastic anemia of pregnancy, and that group II findings are also evidence of folic acid or vitamin B<sub>12</sub> deficiency. To check this he studied the reticulocyte response to the administration of folic acid and found that there was some response in the 4 cases with group II changes, the maximum response being 4.8%. Higher figures were recorded in the other groups: in group III, the maximum was 7.9% and in group IV, 14.4%. Dawson declares that folic acid given to patients with group II changes will raise the hemoglobin level somewhat, but more important is the prevention thereby of subsequent development into florid megaloblastic anemia.

The increasing detection of abnormal hemoglobins in anemic patients in some parts of the world has led to study of the effect of such abnormalities in pregnancy. In Texas, Pritchard et al studied 14 women with a hereditary microcytic anemia in whose blood there was increased hemoglobin A<sub>2</sub>—a condition often named "thalassemia minor," though most of the patients had no Mediterranean ancestry. This abnormality appeared to have no adverse effect on the pregnancy; and there were no abnormal changes in the hemoglobin concentration, blood volume, and total red cell mass. A very different state of affairs was recorded by Fullerton and Watson-Williams working in Ibadan on the effect of hemoglobin SC disease on the incidence of megaloblastic anemia of pregnancy. Anemia of pregnancy is common in this disease, and 32% of their patients who had had no previous treatment had hemoglobin levels of less than 8 Gm per 100 ml at first attendance; megaloblastic anemia was found in



60% of all patients with less than 8 Gm of hemoglobin per 100 ml, and in 28% of all patients, Vitamin B<sub>12</sub> levels were usually normal, but folic acid clearance was abnormally rapid in 10 of 12 patients studied. The combination of the hemolytic anemia of hemoglobin SC disease and of megaloblastic anemia of pregnancy can be extremely severe and even fatal, but will respond to treatment when this is started in time. These workers gave prophylactic folic acid to all patients seen for the first time after December 1959; none of these patients developed megaloblastic anemia, though their hemolytic anemia remained unaltered; but since the severe anemia may well be due to the demands of a hyperplastic marrow on folic acid stores, the treatment, when possible, is clearly worth-while.

The present trend in management of pregnancy anemia thus seems to be that treatment should always be applied if the hemoglobin level falls below 10 Gm per 100 ml (70%) and that the treatment in the last 3 months of pregnancy might well include administration of folic acid as a prophylactic against possible development of megaloblastic anemia. The hemoglobin level seems to have been rehabilitated as a guide to anemia in pregnancy, but in anemic cases examination of the marrow for cellular changes and assessment of iron content is always worth undertaking. Regular estimation of hemoglobin, now practiced in many antenatal clinics, and treatment when indicated, seems to be more rational than mass handing out of iron and folic acid pills. Examination of bone marrow remains the most reliable test for detection of megaloblastic anemia. But, where the technic is available, the FIGLU excretion test is a valuable indicator of impaired folic acid function and provides a warning that megaloblastic anemia may develop.

\* \* \* \* \*

#### The X-Ray Emergency - DU (Neck Pain)

By LT James A. Usselman MC USN. From the Proceedings of Monthly Staff Conferences of the U. S. Naval Hospital, NNMC, Bethesda, Md., 1961 - 1962.

Neck pain is a frequent chief complaint of patients presenting themselves to emergency rooms. The pain may be secondary to injury from the sudden stopping of a car or auto accident, from trauma on the playing field, or from roughhousing at school. The injury is usually of whiplash type and an estimate of its importance and the importance of symptoms becomes paramount. How to proceed in the conduct of examination is a question too often faced by the admitting physician in this day of speed and power.

Many believe that properly conducted filming of the cervical spine should be the initial step in final evaluation. The radiological literature cites many articles and case discussions emphasizing late neurological findings from undiagnosed fractures and dislocations developing for the first time after over-zealous initial examination. It may be pointed out that initial symptoms may be severe, secondary to muscular spasm, and nothing but muscle spasm



will ever be noted; on the other hand, initial symptoms can be very minor and undetected or nonexistent, but extensive fractures or dislocations can be seen readily on x-ray. The purpose of this paper is to emphasize certain aspects of injuries to the proximal cervical spine and to report the result of a series of relationships involving the first and second cervical vertebrae.

All of us well remember seeing a patient arrive with severe neck pain, unwilling to move the neck and lying supine with or without an attendant holding the neck in extension. If gross neurological findings below the neck are not detected, the patient should probably be taken directly to the x-ray department without the examiner's trying to flex or extend the neck in any way.

First filming calls for a translateral cervical spine projection, meaning simply that a film adjacent to the cervical portion of the spine and perpendicular to the stretcher, cot, or table is exposed while the patient lies supine, the tube being arranged so that the x-ray beam parallels the table top at right angle to the spine. Before the patient is moved and before any further filming is accomplished, this initial film is studied. It should provide an indication of alignment of the cervical spine segments and reveal the general contour of the vertebral bodies. Gross abnormalities can ordinarily be detected on the first, most important, film. If it fails to disclose abnormality, the entire cervical spine study—anteroposterior and oblique projections—should be completed.

Most physicians are aware that, although certain minor variations in the mid and lower cervical vertebrae exist, basically they are similar, and fractures or dislocations of mid and lower third vertebrae are essentially similar. In the area of cervical vertebrae one and two, however, abnormalities discussed in the textbook or general reference in diagnostic roentgenology are not always clearly defined and, in some instances, are incorrectly evaluated. Agreement exists that the zone formed by the first two cervical vertebrae has no peer in importance for the reason that regional trauma to the cord from fracture or dislocation in this area can produce quadriplegia or sudden death. Additionally, because Nature "cheated" the first cervical vertebra by taking what should have been its body and fusing it to C2 so that man might easily rotate his head about a fixed point, this structure is subject to a variety of pathologic states.

The odontoid process or dens, fixed and figuratively suspended firmly in space by the first cervical vertebra anteriorly and a strong transverse ligament behind, all too frequently is involved in spine injury and may well be inspected first. Four points of observation are important: first, bone integrity, evaluated by inspection of the bony contour of the odontoid with relation to the adjacent mass of C2, insuring no obvious fracture line, is seen; second, the joint spaces, seen in anteroposterior projections on either side between the facets of C1 and C2, should be equal bilaterally; third, the position of the odontoid on antero-posterior projection should be midline according to most authors and, if not the reason, should be obvious on the film; fourth, in lateral projection, the distance from the anterior aspect of the odontoid to the inner aspect of the anterior mass of the first cervical vertebra should be very nearly 2.5 millimeters.



In evaluating films for fracture of the odontoid, it is well to consider normal variations in odontoid growth and development. The odontoid forms from two lateral masses which fuse in the midline. Failure to fuse completely may result in a vertical line of diminished density splitting the dens. This line divides the dens into two exact halves, producing a normal variation of no significance. The odontoid is separated early from the actual body of C2 by a cartilaginous ring and in a child this horizontally directed line of decreased density may lead to an erroneous impression of transverse fracture secondary to trauma. Rarely, however, are odontoid fractures completely transverse, especially at the base. Occasionally, the dens never fuses, or if fused, is fractured early in life and, ununited, appears as a separate process. Finally, in a rare instance, the odontoid early in fetal life becomes fused with the anterior margin of the foramen magnum and stays a separate ossicle throughout life.

In discussing differential diagnosis beyond anatomical variations, two specific disease states create an abnormal appearance in the area. Rheumatoid arthritis, capable of involving any of the ligaments of the body, has often been noted to involve the transverse ligament holding the odontoid in position. The ligament becomes lax, the odontoid moves dorsally, and the distance between C1 and the dens noted earlier may exceed 2.5 mm and increase to as much as 7.5 mm. In childhood, a patient with neck pain but no history of injury, on lateral film may present anterior dislocation of any of the cervical vertebrae upon its next most inferior neighbor. Most frequently, an obvious ear, nose, or throat infection is seen which produces hyperemia of soft tissues and bone. Hyperemic bone becomes decalcified and cannot maintain its binding power with ligaments. As the ligaments become lax, an upper vertebra is noted to "dislocate" anteriorly on its fellow below at any level in the cervical spine, including the proximal area of C1 and C2.

Consideration of the true traumatic pathologic states should be discussed in terms of the four important criteria alluded to earlier. An evaluation of bone integrity indicates that a fracture can occur anywhere, but often is in the region where the dens unites with the body of C2. The fracture line is usually oblique and courses medially. On the anteroposterior open-mouth projection the fracture is easily seen, and on studying the lateral view, the odontoid ordinarily lies free and posterior to its normal position. The odontoid with its attachments serves as a stabilizing fixture between C1 and C2. Without it, the first cervical vertebra can glide easily forward or backward on the body of C2, resulting in possible compromise of the cord from either direction. The usual injury in the upper cervical spine results in the head and the first cervical vertebra sliding forward on C2 since its stabilizing dens is fractured, but the dens need not necessarily be fractured; simple anterior dislocation of C1 on C2 without fracture may result in malalignment and produce severe cord damage.

Lateral dislocation of the first on the second cervical vertebrae may also occur. Study of the anteroposterior open-mouth projection will reveal unequal interfacet distance. In comparing the interfacet distance, it will be



noted that discrepancies are nearly always grossly evident, there being no space between facet on one side and clearly discernible widening above normal on the other.

Eccentricity of the odontoid process as shown in antero-posterior projection has long been considered by many writers as a reliable single sign of lateral dislocation. Our interest in the reliability of the eccentric odontoid as an indication of dislocation was aroused by the detection of an eccentrically placed dens in films of an individual without complaint referable to the region. It was suggested that a study be done to determine whether or not the eccentric odontoid does provide a true indication of dislocation.

In a review of the literature, it was found that, in 1943, Dankmeijer demonstrated eccentricity of the odontoid in patients with torticollis. He had hospitalized and treated a patient for atlas-axis dislocation solely on the basis of eccentricity of the dens only to find that two weeks later no displacement existed. Follow-up studies on all patients with acute torticollis were found to show similar eccentricity. He concluded that muscle spasm by itself is sufficient cause for the appearance of eccentricity.

In our study over the past six months for all cervical spines, multiple films, often with tomograms, have been made to evaluate the odontoid position with relation to the atlas. The study has included films of the cervical region in patients with and without symptomatology referable to the region. In fifty examinations, eccentricity of the dens has been observed in varying degrees in not less than one-third of asymptomatic individuals.

As a result of this investigation it is our opinion that symmetrical relationships of atlas to axis are, in fact, not so common as believed heretofore and, unless completed with other supporting findings, are of no significance as indicators of dislocation.

### Summary

The emergency situation provided by the patient complaining of neck pain after trauma requires careful x-ray filming of the cervical portion of the spine in certain sequence and with as little manipulation of the patient as possible.

Familiarity with relationships of the atlas to the axis has been emphasized in evaluation of injuries to the proximal cervical region, and normal anatomical variants have been discussed.

From studies of the cervical region using the antero-posterior open-mouth projection, it has been determined that asymmetry of the dens is, in fact, a very common finding and by itself is not a reliable criterion of fracture-dislocation. Recognition of this fact may prevent unduly long hospitalization following erroneous diagnosis.

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#### The Occipital Nerves - A Teaching Drawing \*

J. Grafton Love MD, Section of Neurologic Surgery, Russel Drake, Emeritus Member, Section of Medical Illustration. Proceedings of the Staff Meetings of the Mayo Clinic 38(1):18-19, January 2, 1963.

Not a few people have severe radiating neuralgic pain in the neck and occipital region of the skull who can be benefited by blocking the involved nerve or nerves. A small number of patients having tumors in the foramen magnum have pain or analgesia or both in the distribution of the second cervical nerve root (1, 2). Knowledge of the anatomy of the occipital nerves is helpful in caring for such patients.

Some years ago a sketch was made (drawn by R. D. at request of J. G. L.) of the occipital nerves, the upper cervical region and the back of the head that could be used for lectures and for teaching purposes (figure on p. 12).

In this drawing the first cervical nerve root which emerges above the arch of the atlas is shown in a much lower position than it actually occupies on dissection. This change was made intentionally to emphasize that in the neck there are eight cervical nerve roots and only seven vertebrae, a situation which does not exist throughout the remainder of the spinal column.

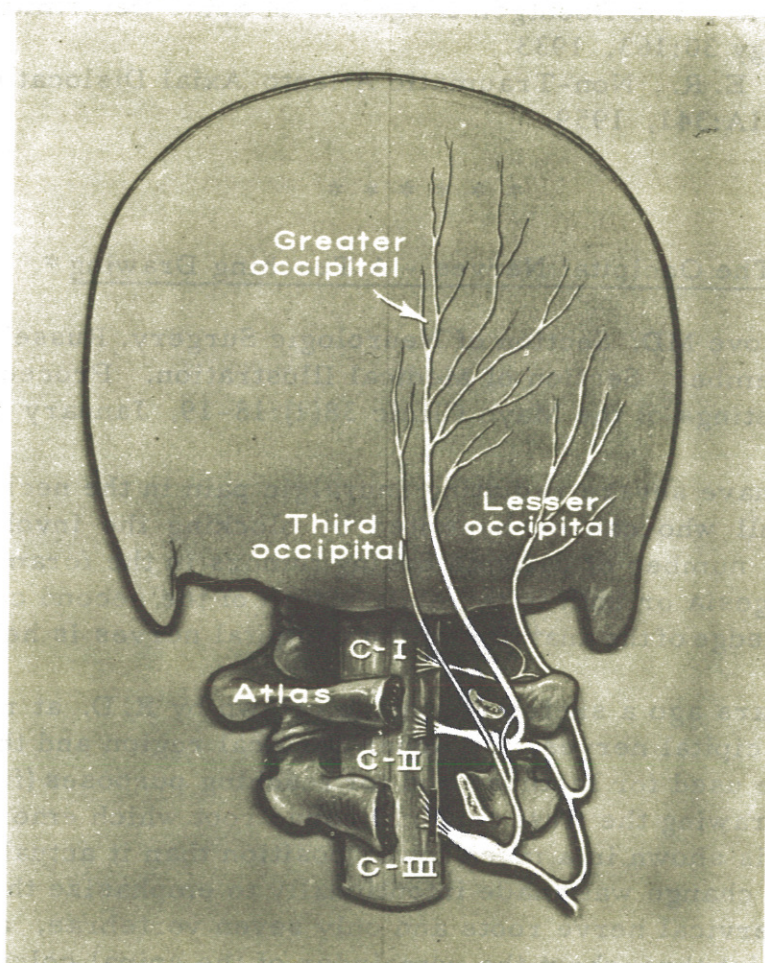
A tumor in the foramen magnum or a dumbbell neurofibroma at the cervico-occipital junction or at the first or second cervical interspace will produce pain in the occipital region. Therefore, when a patient has pain in the upper cervical or occipital region, the possible presence of a neoplasm should be kept in mind.

If a patient having occipital pain does not gain relief from heat used locally and from mild analgesics and if the patient does not have a neurologic deficit, a diagnostic block of the occipital nerves involved is indicated. Sometimes, repeated blocks will suffice to give relief. If the pain recurs after successful blocking, the nerve may be injected with alcohol or it may be resected.

\* From the Mayo Clinic, Rochester, Minn.



If the nerve is resected extraspinally, the pain may recur when the nerve regenerates. In intractable cases, the first author (J. G. L.) prefers intradural section of the posterior root of C2 and C3 (figure) between the spinal cord and the dorsal root ganglion; regeneration is then impossible. Also, through this exposure, the possibility of an intraspinal tumor or a tumor in the foramen magnum can be excluded or, if a tumor is found, it can be removed.



Drawing showing the posterior roots of the first three cervical nerves and their intraspinal and extraspinal relationships. The occipital distribution of the nerves is also shown. The site of division intradurally of C2 and C3 is indicated between the spinal cord and the dorsal root ganglia.

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\* \* \* \* \*



Diseases of Insects of Medical  
Importance in Europe

Jaroslav Weiser.\* Bulletin of the World Health Organization  
28(1): 121-127, 1963.

Promising results from the early use of mass-produced bacterial and fungal preparations for biologic control of economically important insects occasioned interest in the possible role of these products in public health entomology. A conference on the biologic control of insects of medical importance was held in Washington in February 1960. Papers read at this conference (American Institute of Biological Sciences, 1960) reviewed relevant knowledge of insect diseases and parasites, and ensuing discussions led to recommendations for future research.

The present review was prepared with the object of considering, from the European viewpoint, the field dealt with at the above conference largely by North American contributors. It is based on a survey of European literature and the author's own experience, and also mentions certain insect diseases from other areas thought worthy of consideration for introduction to Europe.

At first sight, it would seem unlikely that hematophagous insects could acquire parasites except through the medium of the blood of the vertebrate host. This is, however, far from the case. The larvae of many blood-sucking insects are aquatic, and those of others live in a wide variety of terrestrial habitats, for example, the detritus in rodent nests. Parasites and pathogens invading these larvae may persist throughout subsequent life-history stages. Even as adults, hematophagous insects are frequently subject to infection from sources additional to the host. Mosquitoes may feed on nectar or other plant juices, on hemolymph from the bodies of other insects, and on the sweat of vertebrates. So may bugs, sandflies, fleas, and ticks. Although most insect pathogens are acquired orally, some penetrate the integument of the body surfaces and others are transmitted via the egg from generation to generation.

Viruses, rickettsiae, fungi, bacteria, protozoa, and helminths all include specific insect pathogens or parasites which from time to time destroy large numbers of their hosts in natural epizootics. It is now the role of scientists to define conditions and devise procedures for the deliberate fostering of such outbreaks in vector populations.

## Viruses

Numerous viruses are transmitted to man and animals by insects of medical importance, but scientists are as yet unaware of any virus harmful to disease vectors. The best known viruses pathogenic to insects are those affecting the Lepidoptera and Hymenoptera which harbor species whose presence is

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manifested by polyhedral or granular proteinic inclusions. It should be noted that some polyhedra reported from muscid flies were not as first thought specific pathogens, but owed their presence in the gut of these flies to the latter's having fed from dead infected caterpillars. Attempts to cause disease in flies with such material have given only negative results.

### Bacteria

Although bacterial septicemia is the final stage of every infection of insects, only exceptionally and in well defined cases are bacteria the causative agents. While they readily multiply in insect tissues after injection, disease does not result when they are given by mouth with the food. Secondary factors are necessary to enable them to penetrate the gut wall. Such factors include toxins, metabolites, physical damage, and other parasites—viruses, rickettsiae, fungi, protozoa, and helminths.

Specific bacterial pathogens are not known from medically important insects. However, invasion of such insects by bacteria flourishing in the immediate environment may be a cause of death. Thus, heavy mosquito larval mortalities may take place in ponds treated with bacteria, industrial wastes, and manure.

Two instances are cited of bacteria being responsible for fly mortalities. In the first case, Bacillus lutzae was isolated from moribund larvae of Lucilia sericata and, in the second, Bacillus delendae muscae was identified from flies of several species. In none of the author's Musca domestica rearings over the past ten years has there been evidence of any infection specific for this species.

Mortalities apparently due to undetermined bacteria have been described among hematophagous insects. In cultures of the louse, Pediculus humanus L., it has been observed that up to 5% of larvae and adults are moribund and blackened. These lice exhibited bacterial infection and their death was due to septicemia after rupture of the gut during feeding. Such mortalities are higher in cultures than in the field, and similar observations have been made for mosquitoes and Hemiptera.

As in the case of rickettsiae, some bacteria pathogenic for insects of public health importance are also harmful to man. Their use as biologic control agents is, thus, unallowable. Members of the Proteus group of bacteria serve as examples.

### Fungi

Representatives of most groups of entomophagous fungi parasitize insects of medical importance. The species most commonly recorded from Diptera belong to the order Entomophthorales. Many of the species listed in Thaxter's monograph (1888) have now been recorded from Europe as well as from North America. These usually become evident in nature during summer and autumn. Most of them can be grown in the laboratory, but it has not yet proved possible



to induce epizootics with such cultivated material. Of special interest in Europe is the occurrence of Empusa culicis Braun which has caused local outbreaks among mosquitoes hibernating in basements.

Members of the genus *Coelomomyces* Keilin (order Blastocladales) are lethal parasites of mosquitoes. More than 20 species have been described from Oriental and Australian regions, but with the exception of a fungus possibly referable to the genus recorded from a Russian notonectid, and an uncertain record from mosquitoes from Strasbourg, no European records exist at the time of writing. The WHO has commenced field studies of these fungi to evaluate their biologic control potential. The Deuteromycetes (Fungi Imperfecti) include certain fungi of relatively low host specificity, highly pathogenic for some insects of medical importance.

### Protozoa

While it is often difficult to define the pathogenicity of some of the organisms discussed, histologic evidence of damage is easily obtained in the case of Protozoa. Heavy tissue destruction is always associated with larval, pupal, and adult mortalities caused by parasites of this group. Members of every protozoan class parasitize insects, the important pathogens belonging to the Gregarina, Coccidia, Microsporidia, and Haplosporidia. Most of the species found in the intestinal tract are harmless commensals. Gut flagellates, for example, only enter the tissues when some rupture of the intestinal wall opens the way to secondary infection. While the gregarines confined to the gut of mosquitoes, fleas, and other insects are harmless commensals, species invading the tissues are dangerous parasites.

Coccidia are not of common occurrence, but one genus has often been reported from fleas. The infection is spread by contaminated flea feces in the nest of the vertebrate host and is one of the natural regulatory factors limiting flea populations. Microsporidia are the most common parasites of medically important insects. In cockroaches, three species are present and various species of cockroaches are parasitized.

Five microsporidians are known from flies, and the cross infectivity of these parasites for different Brachycera has not been investigated, but data which is available point to a lack of close host specificity. Natural epizootics and heavy mortalities in laboratory colonies have been reported. Adult and larval fleas also harbor Microsporidia.

### Nematodes

Most of the 10 nematodes known from cockroaches, 78 from Diptera, and 4 from fleas are harmless inhabitants of the gut. Members of the Mermithidae, Steinernematidae, and Tylenchida are tissue invaders. Although most of the Tylenchida live and produce their larvae in the body of the host, they are non-pathogenic. They are not responsible for the introduction of bacteria, and it has been demonstrated that they affect neither the longevity nor fecundity of the host.



## Summary

Every group of insect pathogens—the viruses alone excepted—is known to have representatives harmful to insects of medical importance. The diseases concerned are of limited specificity and do not affect vertebrates. Some of the causal agents, notably, bacterial and fungal, can be mass produced on artificial media, while others, rickettsiae, protozoa, and helminths, for example, must be cultivated on media containing host organs or on living matter.

Thus far, most of the relevant research has been concentrated upon parasites and diseases of larvae. Adult insects merit more attention in this regard. So does the distribution of insect diseases in relation to climatic and other factors, for such data as is already known have clearly indicated how advantageous it would be if certain pathogens concerned could be artificially spread beyond their natural range. Careful biogeographical studies in Europe and other parts of the world are a prerequisite for such biologic control measures, and much extensive research in these fields is under way.

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## MISCELLANY

### More Surgical Teams Needed for South Vietnam

Washington, D. C., 11 March 1963. Surgical teams are being recruited by the U. S. Public Health Service to provide emergency surgical care to the civilian population of South Vietnam. Four teams are now on duty in the cities of Can Tho, Nha Trang, Da Nang, and Pleiku. Dr. Luther L. Terry, Surgeon General of Public Health Service, said, "The Government of South Vietnam has requested additional surgical personnel. The teams now on duty are making an important contribution to the health program for the care of civilians in that country."

The staff of each team includes a chief surgeon, assistant surgeon, anesthesiologist or nurse anesthetist, operating room nurse, surgical ward nurse, and medical technologist. Only U. S. citizens are eligible for assignment. Teams are serving in regional hospitals where new surgical facilities have been completed. Assignments are for two years. Experienced surgeons and surgeons completing residency by July, as well as other team members, are being recruited.

Salaries correspond to the current scale for foreign duty, with allowances for quarters and dependents. Families may accompany team members to South Vietnam. Details may be obtained from Dr. Leo J. Gehrig, United States Public Health Service, Washington 25, D. C.



### Navy Jump Team Has Opening for New Man

The Chuting Stars, the Navy's parachute exhibition team, has announced that they are now accepting applications from Hospital Corpsmen to fill a recently vacated spot on the team.

All applicants must be 21 years old, eligible for at least two years shore duty, and willing to travel nine months out of the year. The jump team offers a challenge to those men who are willing to undergo the rigorous training and hard work required by a Navy exhibition team. Previous jump experience is preferred but not necessary.

If you would like to reap the rewards of having served with a truly great team, contact the Officer-in-Charge, Chuting Stars, Naval Air Station, Pensacola, Fla., via chain of command. A photograph of each applicant is required with the application.

—Public Information Office, Hdq., Naval Air Training Command, N.A.S., Pensacola, Fla.

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### Phenomenal Record of PHS Division of Foreign Quarantine

The United States recently marked its 15th straight year without an outbreak of quarantinable disease known to have been introduced from abroad. The quarantinable diseases are smallpox, yellow fever, cholera, plague, louse-borne typhus, and louse-borne relapsing fever.

"This achievement is particularly noteworthy," said Surgeon General Luther L. Terry, "in view of the steady climb in the number of persons entering the United States who have been in parts of the world where the quarantinable diseases are common, and in view of the increase in the speed of air travel. It is gratifying to know that our inspection procedures and immunization requirements for international travelers are succeeding in preventing the spread of these diseases into our country."

The Division of Foreign Quarantine of the Public Health Service is responsible for preventing the importation of quarantinable and other communicable diseases into the United States. The Division is on guard at 380 seaports, airports, and land border points of entry in the United States, its possessions, and Puerto Rico. In fiscal year 1962, Division quarantine officers inspected 32,980 ships, 65,187 aircraft, and 16,782,531 travelers, including 10,670,199 local Mexican border crossers.

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### BUMED NOTICE 6222

8 March 1963

Subj: Early detection of syphilis in patients with other venereal diseases

This Notice sets forth requirements for examinations, including follow-up, of patients who have contracted nonsyphilitic venereal diseases in order to detect early and unrecognized cases of syphilis.

### School Failures

Failure in school is often an administrative and philosophical judgment; it varies from place to place without much relevance to absolute performance of the child. This fact is recognized in a monograph, Failure in School, prepared by Willard C. Olson, Dean of the University of Michigan School of Education; W.D. Wall, London, England; and F.H. Schonell, Brisbane, Australia. This report is the culmination of a series of meetings of specialists in education from ten countries; it is based, in part, on a survey conducted by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) in twenty countries.

The authors discern a trend over some years in most countries toward fewer school failures. As noted in the report, this reflects an increase in growth philosophy, emphasis on success at the level of the child, and a decrease in selective and failure philosophies. In a chapter entitled, Some Fundamental Aspects of Child Growth, Dean Olson describes current research and theory based, in part, on research on child development in the University of Michigan School of Education.

The report, Failure in School, is published by the UNESCO Institute for Education in Hamburg, Germany. Copies are available at the Institute for \$1.50 each.

—Research Report from the University of Michigan, No. 13, March 1963.

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### Naval Medical Research Reports

U.S. Naval Medical Research Institute, NNMC, Bethesda, Md.

1. Structural Transitions in Antibody and Normal  $\gamma$ -Globulins. I. Molecular Properties: MR 005.06-0001.01 Report No. 17, 1962.
2. Structural Transitions in Antibody and Normal  $\gamma$ -Globulins. II. Fluorescence Polarization Studies: MR 005.06-0001.01 Report No. 18, 1962.
3. Further Biological Properties of the Sea Cucumber Toxin Holothurin A: MR 005.06-0010.01 Report No. 26, 1962.
4. Further Elements of Structural Specificity in Potentiation and Blockade of Excitable Tissue Preparations by Aryl Esters of Tropine and  $\psi$ -Tropine. III: MR 005.06-0010.01 Report No. 27, 1962.
5. Effects of Mechanical Stimulation on Some Electrical Properties of Axons: MR 005.08-0020.02 Report No. 1, 1962.
6. Pulmonary Airway Changes Resulting from Pulmonary Arterial Ischemia: MR 005.12-0002.04 Report No. 9, 1962.
7. Tumor Growth in Organ Culture: MR 005.12-0002.04 Report No. 10, 1962.
8. A Thin Semidisposable Back Surface Mouth Mirror - Memorandum Report 62-1, 1962.

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# GAS

Every soldier, if he expects to live and fight another day, must be able to identify gases. The following pictures were prepared by the Armored Force Replacement Training Center to assist in instructing such identification.



GRANNY SMELLED GERANIUM  
STARTED FEELING KINDA BUM,  
THOUGHT SHE HAD A GARDEN BLIGHT,  
WHAT SHE'D FOUND WAS—

**LEWISITE!**

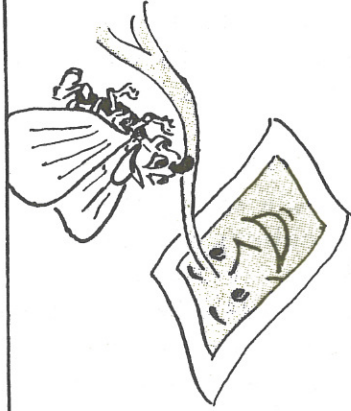


APPLE BLOSSOMS LEND THEIR SMELL  
TO THE SADNESS OF FAREWELL,  
IT'S O.K. IF YOU FEEL BLUE,  
BUT **TEAR GAS** STARTS  
YOU SOBBING TOO.



NEVER TAKE A CHANCE, MY FRIEND  
IF SOME GARLIC'S IN THE WIND  
DON'T THINK MUSSOLINI'S PASSED-  
MAN — YOU'RE BEING

**MUSTARD GASSES!**



SAID THE FLYPAPER TO THE FLY-  
"YOU LOOK SICK ENOUGH TO DIE-  
THAT AIN'T FLIT YOU'VE CHANCED TO  
SNIFF  
IT'S **CLORPICRIN**  
ONE SMALL WHIFF



FATHER WAS PLEASED THAT SUNDAY MORN  
TO NOTE THE AROMA OF FRESH CUT CORN-  
CRIED LITTLE WILLIE-TURNING GREEN-  
GRAB YOUR MASK, POP — THAT'S

**PHOSGENE!**

These illustrations, redrawn by the Graphic Arts Section of BuMed, originally appeared in the "Navy Department BuMed News Letter," Vol. 1, No. 8, dated 5 March 1943.

Remnants of Little America III Sighted

Washington, D. C. (NAVNEWS, 15 March 1963). Remaining equipment of one of the early United States stations on the Antarctic continent has been sighted on an iceberg far out to sea by a lookout aboard the icebreaker USS EDISTO (AGB 2).

The remnants of what appears to be Little America III, built by Rear Admiral Richard E. Byrd's expedition of 1940 - 1941, were sighted embedded in a quarter-mile long iceberg almost 300 miles west of its original position at Kainau Bay on the Ross Ice Shelf. The station's present position (latitude 77°-32.5 South, longitude 174°-22.5 East) puts it 170 miles from the Navy's main logistics staging area for Operation DEEP FREEZE 63 at McMurdo Sound. Electric power poles jutting from the top of the iceberg were clearly seen while along its 100-foot sheer face appeared a room with cans and equipment placed neatly on shelves.

A helicopter from EDISTO's Helicopter Utility Squadron FOUR landed on the iceberg, but the crewmen were unable to enter the camp since it was covered with 25 feet of snow.

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FROM THE NOTE BOOKImportant Health Record Notice

Personal Identification Data on Health Record Pages: An individual's full name, file/service number, and date of birth must be placed on each health record page. As new pages, such as SF 88, 89, 600, NavMed-10, are prepared, the complete identification data must be affixed. Whenever complete data is not placed on each page, the possibility exists that an unidentified page may become separated from the health record and lost or misfiled. Improperly identified pages received in BuMed create an additional and unwarranted workload. Unfortunately, many pages, particularly NavMed-10's and SF 600's, are never completely identified and therefore are never made a part of the individual's medical record. The absence of a page could well militate against a member's claim for disability benefits with the Veterans Administration, or could otherwise be detrimental to his best interests. The problem is general. The attention of Medical Department personnel must be directed to the problem.

Remember:

FULL NAME - DO NOT USE INITIALS  
File/Service number  
Date of Birth

—P Q & M R Division, BuMed

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**Announcement.** All Naval Flight Surgeons and associated scientists, (past, present, Regular, Reserve, or Retired) attending the 34th Annual Aerospace Medical Association meeting in Los Angeles, 29 April - 2 May, are invited and urged to attend a Social Hour at the Statler-Hilton Hotel on Sunday, 28 Apr 1963, at 7:00 p. m. in the St. Louis Room.

**New Appointment to Staff of UCLA.** On 1 January this year, CAPT Sidney Goren MSC USN, currently attached to the Bioscience Office, Hdq, Pacific Missile Range, Point Mugu, Calif., was appointed Associate Professor of Preventive Medicine on the staff of UCLA. In addition to new responsibilities in this honorary post, CAPT Goren will continue his present work in toxicology and preventive medicine at Point Mugu.

**New Residency Established.** A program for advanced residency training in Gastroenterology was recently established at the U. S. Naval Hospital, Philadelphia, Penna., by the Bureau of Medicine and Surgery. The first appointment to this training has been received by LCDR Franklin M. Roberts MC USN. This medical subspecialty program will be under the immediate supervision of CAPT Orville F. Nielsen MC USN within the Medical Service of the hospital. CAPT Horace L. Jones MC USN is Chief of the Medical Service.

#### AMA ATLANTIC CITY MEETING

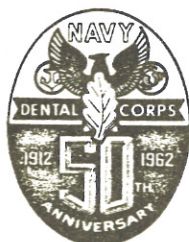
The 112th annual meeting of the American Medical Association will be held in Atlantic City, June 16 - 20, 1963, with an anticipated attendance of 15,000 physicians. This will be the 17th time the AMA has met in Atlantic City since 1900. At its last meeting there, in 1959, the attendance was 32,882, including 13,143 physicians. Dr. David B. Allman who practiced surgery in Atlantic City for 35 years and served as President of the AMA, 1957 - 1958, will be Honorary Chairman of arrangements. Dr. Charles Hyman is the local Chairman. The Traymore Hotel and the new Colony Motel will serve as joint headquarters for the meeting. House of Delegate sessions will be held at the Traymore. Headquarters for the woman's auxiliary will be Chalfonte-Haddon Hall Hotel.

George Larson, AMA Convention Services Director, said that with "better transportation facilities to the big resort city and more up-to-date room accommodations, attendance at the '63 meeting should be exceptionally high—probably setting a new record." Since the AMA last met here, he said, "more than 4000 new modern motel rooms have been provided, and the auditorium has been renovated, including new escalators and additional floor space. Then, too, the convention bureau has arranged for a new type of air-land shuttle service between Philadelphia and Atlantic City."

The boardwalk level of the Atlantic City auditorium will be devoted to the AMA industrial exhibits and scientific meeting rooms. The auditorium's lower level will "house" the scientific exhibits. A few scientific sessions will be held in hotels near the auditorium.

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## DENTAL



## SECTION

The Use of an Inert Synthetic Gauze  
in Periodontal Surgery

Abram I. Chasens, DDS,\* and Richard W. Marcus, AB, DDS,\*\* Teaneck, New Jersey. J Periodont 34(1): 23-26, January 1963.

It is generally recognized that the maintenance of a healthy gingival margin is associated with its relationship to the attached gingiva, alveolar mucosa, muscle and frenum attachments, and the vestibular trough. A variety of techniques have been developed for widening the zone of attached gingiva, repositioning of muscle and frenum attachments, and deepening the vestibular trough.

It is not the purpose of this paper to discuss the merits or shortcomings of the various surgical methods employed, but rather to deal with the problem of maintaining the soft tissues and packing material in the desired position until there has been sufficient healing, and to prevent reattachment of these tissues in their previous undesirable relationships.

In more than 200 cases of mucogingival surgery the authors have employed an inert synthetic gauze to form a matrix with the periodontal pack at the base of the newly deepened vestibular trough. This maintains a smooth rounded surface at the trough base, prevents chipping and displacement, and promotes healing of the trough in the desired U-shape.

According to the manufacturer, the gauze, a nonadhesive packing strip, is a specially woven viscose fabric impregnated with a non-occlusive, non-irritating water-in-oil emulsion. When used as a dressing it may be removed without pain or damage to the tissue. As a drain the special emulsion prevents blockage of the fabric by wound secretions. It is supplied in 4 yard strips 1/2", 1" and 2" wide.

**Method of Application.** The periodontal pack is mixed to a putty-like consistency and following the marginal and muco-gingival surgery, individual pellets of pack are placed and locked into each interproximal space and luted to a roll of the pack applied on the lingual or palatal if marginal surgery was

\*Professor and Chairman, Department of Periodontics and Oral Medicine, Fairleigh Dickinson University School of Dentistry, and \*\*Instructor, Department of Periodontics and Oral Medicine, Fairleigh Dickinson University School of Dentistry.



performed on these surfaces. A thin roll of the pack is then luted labially and buccally to the material locked interproximally. A strip of the inert gauze is cut to the length of the deepened trough and a thick roll of pack is placed lengthwise on the gauze. The gauze is then folded to the desired U-shape about the pack, and this is placed along the base of the trough. Is is then moulded with the patient's lip by the operator and luted to the roll of packing which was previously applied on the labial and/or buccal surface. The entire pack is covered with adhesive foil which may be removed by the patient after three hours without disturbing the pack. Replacement of the pack is done at weekly intervals until sufficient healing has occurred. In most cases the pack is maintained for two weeks. Where bone has been exposed or osseous surgery performed, the pack may have to be replaced at weekly intervals for three to four weeks.

Because of the inert nature of the gauze, it will not adhere to or irritate the healing soft tissues. The packing material fills the spaces in the gauze and creates a smooth, hard, rounded surface against which the soft tissues may heal without interference.

Additional uses for the gauze:

1. To aid in retention of the pack. Where embrasures are narrow and retention of the pack is difficult, small strips of gauze may be passed through the embrasures and locked into the pack.
2. To cover exposed bone. When osseous surgery has been performed or when bone is exposed, strips of gauze are applied over the bone before placing the pack. Because the material is thin and applied with ease, it has an advantage over some of the thicker less flexible materials previously used.
3. In the management of trifurcation and bifurcation involvements. When treating advanced trifurcation and bifurcation involvements, it may be necessary and desirable to completely open these areas from buccal to lingual. To prevent the interradicular tissue from granulating and to keep the opening patent during the healing period, a small amount of packing material is rolled into a strip of gauze and passed through the furcation area. This is trimmed off so that about one to two millimeters of the pack and gauze extends on each side of the opening. This small extension is then incorporated with a roll of packing applied on the buccal and lingual. An added advantage of this method is to increase the retentivity of the pack and the ease with which the gauzepak roll may be removed from the furcation area.

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#### Personnel and Professional Notes

Dental Rating Is 15 Years Old. The dental rating was established by the Secretary of the Navy in December 1947. On 2 April 1948, Dental Rating Group XI became effective, marking the first time that the enlisted men of the Navy wore a dental rating badge. Rear Admiral C. W. Schantz, Assistant Chief of the Bureau of Medicine and Surgery (Dentistry) and Chief, Dental Division,

at a recent meeting of dental technicians of the Washington, D. C., area, expressed the desire that this anniversary be commemorated by appropriate activities. As part of Admiral Schantz's address at the meeting, he outlined the history of the Dental Technician Rating. Among the points he covered in his talk was the fact that the Dental Technician Rating is unique in that, although both the Army and the Air Force have Dental Corps, only the Navy has its own specialized group of dental technicians.

The first class of hospital corpsmen to be trained as General Dental Technicians was convened at the U. S. Naval Dental School, Washington, D. C., in February 1923. These men were trained to assist dental officers with the management of dental patients, especially in the field of preventive dentistry and further, to assist dental officers with administrative duties. Students who demonstrated mechanical skill were occasionally given further training in dental prosthetic-techniques. In January 1943, two dental technicians were ordered to the Ritter Dental Manufacturing Company for training in the care and upkeep of dental operating units. This marked the beginning of instruction in the repair of dental equipment in the Navy by Dental Technicians.

The Bureau of Naval Personnel established the dental technician, prosthetic branch, as part of the Pharmacists Mate rating in March 1944. This helped to insure that those with sufficient training in prosthetic techniques would be assigned to appropriate duties. Upon the Japanese surrender in August 1945, there was a total of 10,335 pharmacists mates serving in three dental technician branches of the Pharmacists Mate rating. At this time there were 1200 Waves designated as dental technicians.

The Korean action marked the first time in history that enlisted men of the Navy wore the dental rating in combat. The following commendations were awarded as result of combatant action:

Navy Cross	1
Silver Star Medal	1
Bronze Star Medal	1
Letter of Commendation with Ribbon and Combat "V"	8

At the peak of the Korean incident, 4700 dental technicians were on duty throughout the world.

Today there are over 3200 dental technicians on active duty. Of these, about 1100 are serving on sea or foreign shore duty while others, upon completion of training at a Field Medical Service School, may be assigned to assist dental officers on duty with Force Dental Companies that support the Fleet Marine Forces. These dental companies provide a flexible, highly mobile dental service, capable of meeting the treatment requirements of the varied types of Marine Corps operations.

Dental Technicians trained in clinical laboratory techniques may be assigned to Research Activities from Cairo, Egypt, to Great Lakes, Illinois. There are Dental Technicians, General and Prosthetic assigned to the U. S. Naval Examination Center, as test item writers. General Dental Technicians are assigned to all dental treatment facilities and may also be assigned to the various Enlisted Personnel Distribution Offices and in the Bureau of Medicine



and Surgery. Outstanding technicians in all specialties of the rating may be assigned as instructors in basic or advanced dental technician schools.

—Professional Branch, Dental Division, BuMed.

Dental Technicians in the Washington Area to Celebrate 15th Anniversary.

Dental Technicians in the Washington, D.C., metropolitan area plan to celebrate the 15th anniversary of the Dental Technician rating. Plans have been completed for a semi-formal social affair to be held on the evening of 19 April 1963, at the Non-Commissioned Officers' Club, Andrews Air Force Base, Washington, D.C. Rear Admiral C. W. Schantz, Assistant Chief of the Bureau of Medicine and Surgery (Dentistry) and Chief, Dental Division and Rear Admiral F. M. Kyes, Inspector General, Dental and Assistant Chief, Dental Division, will be the guests of honor.

U. S. Navy Dental Corps Continuing Training Program. Among the short post-graduate courses being offered by the U. S. Naval Dental Corps at the Naval Dental School, NNMC, Bethesda, Md., is "Operative Dentistry." This course will be held 22-26 April 1963. The instructor will be Capt L. M. Armstrong, DC, USN. Quotas have been assigned to ComOne, ComThree, ComFour, ComFive, ComSix, ComNine, PRNC, SRNC, and CNATRA.

This short course is open to active duty career dental officers of the Armed Forces in accordance with quotas established by the Bureau of Medicine and Surgery.

Applications should be received in the Bureau as early as possible and preferably, not less than 4 weeks prior to commencement of the course. The Bureau Professional Advisory Board will make recommendations on all requests, and upon approval by the Surgeon General, applicants will be notified as to the final action. Those approved will be nominated for TAD or authorization orders, as appropriate. Accounting data will be forwarded to individual officers nominated for TAD orders. Staff Dental Officers not utilizing assigned quotas shall report this information to BUMED, Code 6111, one month prior to the convening date of the course. This will allow the Bureau to fill the quota from other districts.

Captain Kyes Promoted to Rear Admiral. Capt Frank M. Kyes, DC, USN, Inspector General, Dental, BuMed, was promoted to the rank of Rear Admiral on 1 March 1963.

RAadm Kyes attended San Diego State College, and received a DDS degree from the University of Southern California in 1930. He entered the Navy Dental Corps in 1936. His many Navy assignments include sea duty aboard the USS NEW ORLEANS and shore duty on Guam, where he organized a school for native dentists in the Pacific Trust Territories. One of his most interesting and challenging assignments was as instructor at the U. S. Naval Dental School at Bethesda, Md., from 1948 to 1951. He later served as Director of Dental Activities and Dental Reserve Program Officer of the 9th Naval District. He is a diplomate of the American Board of Prosthodontics and a Fellow of the American College of Dentists.



## PREVENTIVE MEDICINE

### Food-Poisoning Outbreak

The sudden onset of nausea, vomiting, and diarrhea with malaise occurring a few hours after eating are the characteristic complaints of victims of an epidemic disease which can almost invariably be traced to violations of the basic principles of sanitation in food-service establishments. Recent events at a naval station illustrate graphically this perennial problem.

The first patient reported to the station hospital for treatment at 1630, and within 3 hours 18 patients appeared. By 1730 it was apparent that a food poisoning epidemic was taking place. Off duty medical officers were alerted, station duty officers notified, and immediate epidemiological investigations undertaken. The noon meal was suspected since none of the first patients had eaten the evening meal. By 1815 it was determined that all patients affected to that time had eaten the noon meal near the close of the feeding period and all were served in 2 adjacent lines of the 6-line mess hall. The one food common to the first 12 patients was potato salad which was not on the noon menu but was on the evening menu. It was learned that the potato salad had been made in the salad preparation area of the galley between 1100 and 1200 and placed in 6 portable salad refrigerators. About 250 portions of potato salad were made as part of the salad bar for the evening meal. During the latter part of the noon meal 2 serving lines ran out of cottage cheese salad on the salad bar and the potato salad was substituted. Twelve trays of potato salad had been made; 2 were served at the noon meal and the remainder at the evening meal. As expected, a second influx of patients, who had eaten potato salad at the evening meal, took place during the night: 25 additional patients reported. All those affected at both meals were served in the same 2 mess lines and the only common food was potato salad.

It was felt early in the investigation that this episode was staphylococcal in origin because of the symptomatology and the incubation period. The expected second influx of patients during the night from the evening meal made it virtually certain that the involved food was the potato salad. Samples of the evening meal were obtained and cultures of pustular skin lesions of the hands were obtained from 3 mess cooks, 1 of whom worked in the salad preparation area and helped in the preparation of the potato salad. Samples of the evening meal revealed Staphylococcus aureus in the potato salad on culture. Other foods were negative for pathogens. Laboratory examination of stool specimens revealed nothing significant. Further investigation revealed that one of the



portable refrigerators, which are used for the salad trays, was not operating properly and the minimum temperature maintained was 60° F. This refrigerator served that area of the mess hall involved in this episode. It is believed that the causative agent was introduced into the potato salad, possibly by the mess cook involved, and that the production of toxin was enhanced by the temperature maintained in the faulty refrigerator.

Guidelines for the prevention of occurrences such as this are to be found in Chapter 1 of the Manual of Naval Preventive Medicine, "Food-Service Principles." The most essential element in prevention of food-borne diseases is adequate food-sanitation training for food-service personnel, as required by SECNAV Instruction 4061.1. It is also imperative that all personnel be examined and cleared by a medical officer prior to assignment to food-service duties. In addition, weekly "surprise" physical inspection of all food-service personnel for personal hygiene must be conducted by the Medical Department. In particular, the examination will be to detect acute and chronic illnesses of a communicable nature and pustular lesions of the skin, which, when present on the hands or arms of food-service personnel, are almost certain to lead to food contamination (as in this outbreak). The food-service supervisor is responsible for daily inspection of his personnel for evidence of open lesions (such as cuts and boils) as well as general appearance. Supervisory personnel should be constantly aware of the effectiveness, adequacy, proper operation, and cleanliness of equipment and utensils used in the preparation and serving of meals. Adequate soap dispensers and paper towels must be made readily available for all food handlers and their use required; also, strict attention to finger nails. Strict adherence to safe and sanitary food-service techniques must be stressed and demanded of all food-service personnel at all times.

#### Lessons to Be Learned from This Food-Poisoning Outbreak

Strict adherence at all times to the following key food-service techniques is most important:

- a. Adequate training of food-service personnel as required by SECNAV Instruction 4061.1
- b. Adequate daily inspection of food-service personnel and equipment by food-service supervisors
- c. An awareness of the Medical Department of its responsibilities in food-service procedures and techniques and adequate inspection of food-service personnel and equipment.

—Environmental Sanitation Section,  
Preventive Medicine Div., BuMed.

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Equine Piroplasmosis in the United States

W. L. Sippel, J. H. Gainer, R. W. Allen, J. E. B. Mouw, and M. B. Teigland. J Amer Vet Med Ass 141(6): 694-698, 15 Sep 1962. Abstract from: CDC Veterinary Public Health Notes, PHS, CDC, Atlanta, Ga., January 1963.

The authors discuss the incidence of equine piroplasmosis in Florida. The first recorded case of piroplasmosis in the United States was found near Miami on 10 August 1961. One of the authors was asked to examine a horse with atypical signs of infectious anemia. A preliminary diagnosis of piroplasmosis was made, which was confirmed by the Department of Parasitology at the University of Miami Medical School. Blood smear indicated unusual bodies in the red blood cells. Slides were subsequently forwarded to the National Animal Disease Laboratory at Ames, Iowa, and the Animal Disease Eradication Division of the U. S. Department of Agriculture in Washington, D. C., where they were identified as probably Piroplasma caballi (Babesia caballi).

A subinoculation test was used to confirm the presence of the disease. A hinny was obtained from a dog food manufacturer and given 2 liters of citrated blood from the horse originally infected with piroplasmosis. At the time of subinoculation, the horse had recovered and appeared normal in every way. On the 6th day, piroplasmata were found in the blood of the hinny. Other than a slight temperature reaction and slight drop in the red blood cell volume, the hinny developed no signs of the disease. This hinny, which has since been kept in a Rockefeller-type isolation unit, was found to have piroplasmata in the erythrocytes 10 weeks after inoculation, but not at 14 weeks.

Following the discovery of the first case, all practitioners in the area were alerted by the U. S. Department of Agriculture to the presence of the disease and were requested to send formalinized blood from every horse with signs of anemia and weakness to the Florida Diagnostic Laboratory for examination for piroplasmosis.

No other cases were detected until 26 January 1962, when the infection was found in a horse stabled near Davie, Florida. Until 31 May 1962, 26 accessions (groups of specimens) involving 39 horses, were found positive by the acridine-orange staining technique at the Florida Diagnostic Laboratory. From 31 May until 15 July 1962, 25 additional positive cases were identified.

The authors point out that equine piroplasmosis is known to exist in Cuba, and they are of the opinion that the disease was brought into the United States with the Cuban Walking Horses.

The EIS Veterinary Officer of the Florida State Board of Health stated that a total of 115 infected animals involving 85 to 90 infected premises have been found in Florida since the original case in August 1961. Infected farms are quarantined and animals sent to slaughter, or transported only on permit from the Department of Agriculture. Uninfected animals in quarantine areas can be moved only with permit.

The Florida Department of Agriculture has received a \$100,000 appropriation from the legislature to be used primarily in control work and limited



research, and \$40,000 from the U. S. Department of Agriculture for similar work. Five infected animals are now being studied in Broward County; studies are directed toward diagnosis of "carrier state" by means of the CF test. This is preferred since, frequently, infected animals may show negative blood smears. Rhipicephalus sanguineus has been presumed to be the principal vector of piroplasmosis in Florida. Attempts also are being made to evaluate the tropical horse tick, Demacentor nitens, as a vector. Recently D. nitens has been found widespread in southern Florida.

An officer of the University of Florida has reported that his department is currently doing a limited amount of drug investigation aimed at the control of the carrier state of the disease.

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### Glue Sniffing a Health Hazard

Editorial, Baltimore Health News, Baltimore City Health Department  
39(12): 88-89, December, 1962.

Recent studies in Los Angeles, Miami, and Denver of youngsters who have engaged in glue-sniffing have shown evidence that such practice results in both physical and mental damage.

The following is a summary of these studies as reported in the September 1962 issue of the City Health Officers News, the monthly publication of the United States Conference of City Health Officers.

Three-month medical tests of children quartered in the Los Angeles Juvenile Hall have yielded evidence of physical damage from the spreading glue-sniffing craze among juveniles, many of whom bring on alcoholic-like jags—and new problems for health and police officers—from such ingredients as model-airplane cement and other compounds containing aromatic hydrocarbons.

Dr. Jacob Sokol, Chief Physician at the Juvenile Hall, examined 71 glue faddists aged 8 to 18 and a control group of children who had not indulged in the practice. Among the 71 sniffers—60 boys and 11 girls—69 had blood abnormalities and 62 had abnormal urine indicating kidney damage. Liver damage was evident in 4. No such abnormalities were found by Dr. Sokol among the control group.

The glue habit is by no means confined to children who get in trouble with the law, Dr. Sokol added in a report of his findings to police and parole officers in Los Angeles. He said that many other juveniles who worry parents and baffle family doctors by suddenly complaining of weakness, headaches, and dizziness are just suffering from glue hangovers.

These glue-sniffing effects were among those listed by Dr. Sokol:

- (1) Poor concentration and dullness. (2) Double vision. (3) Euphoria.
- (4) Long periods of sleep followed by acute hunger. (5) Pains in the head, neck, chest and/or legs. (6) Forgetfulness. (7) Sneezing. (8) Coughing.

Alarming accounts of the prevalence of glue-sniffing also came from other sections of the country.

The glue habit has become "a king-size headache" for health and law enforcement authorities in Miami, the Associated Press reported. "Hallucinations or vivid dreams in color and extreme exhilaration" have been noted by sniffers there, according to the AP, which added: "Signs point to such long-range effects as loss of weight, low blood pressure, change of personality, brain and kidney damage and death."

Police who broke up 5 Miami area juvenile gangs accused of multiple burglaries and automobile thefts discovered that many of 33 boys arrested were sniffers who joined in the crime spree while glue-exhilarated.

A study by 2 University of Colorado Medical Center researchers, published in the American Medical Association Journal, showed that arrests of young sniffers for crimes in Denver increased from 30 in 1960 to 134 in 1961. The study concluded that inhalation of the solvent vapors had become "a source of major concern."

In bulletins alerting local health officials to the craze, the U. S. Public Health Service has pointed to other sniffing episodes in Chicago, Salt Lake City, the District of Columbia and in Arizona, Texas, and Colorado.

"It seems clear that such inhalation can cause a syndrome resembling acute alcoholic intoxication, and it remains unclear as to whether or not repeated inhalations can result in chronic toxicity," the USPHS said.

#### State Law on Glue Sniffing

Most recent effort to curb glue-sniffing in Maryland has been the enactment of a State Law which makes it a misdemeanor to sniff glue or other harmful substances which have the effect of dulling the brain or nervous system. The law, Chapter No. 53 of the State Laws of 1962, was approved by the Governor on 23 March 1962, and became effective 1 June 1962.

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#### Recent Studies of Haemorrhagic Fevers in Singapore

K. A. Lim, A. Rudnick, and Y. C. Chan. Singapore Med J 2(4): 158-161, December 1961.

Haemorrhagic fever in the Philippines was described by Hammon et al., 1960, and a similar disease was reported in Thailand by Nelson et al., 1960. The virus studies in these two diseases were reported by Hammon et al., 1960, and summarized at the Tenth Pacific Science Congress. This report is of a related disease which first appeared in Singapore in 1960. The clinical features have been described by Chew et al., 1961, and also by Lim, Hanam, and Chan, 1961, and are only summarized here with results of more recent studies.

The Singapore outbreak began in June, 1960, and is best described as a febrile illness resembling dengue but with haemorrhagic manifestations.



The patients mostly present with a febrile illness with headache, backache and remote pains, some with lymphadenopathy. During the course of the fever about half the patients developed morbilliform rashes characteristic of dengue fever and the disease would have been regarded as dengue fever but for the appearance of petechial haemorrhages in a good many patients. In a series of 79 patients studied by Lim et al., 1961, 16 had petechial haemorrhages but there was no frank bleeding. All had thrombocytopenia with thrombocyte counts of less than 200,000 per cu mm. by the direct method. Sixty-three percent had thrombocyte counts of less than 100,000 per cu mm. The patients were mainly young adults and there were no deaths. The clinical features are summarized in Figure 1.

The disease had never been seen before in Singapore and was named Singapore Haemorrhagic Fever to distinguish it from dengue fever which is endemic in Singapore and in Malaya. This has been shown by serological studies, Hale et al., 1956, although dengue virus had not been isolated before in Singapore. An epidemic of dengue fever was reported in Singapore in 1905 when no virus studies were available. In the Federation of Malaya there was an outbreak of dengue fever in 1956 when Smith isolated dengue type 1 virus.

By the end of 1960, 148 cases including the 79 cases mentioned had been studied in Singapore General Hospital. There were 10 patients below the age of 10 years who have not been included in this study. All cases studied were hospital admissions and it is not known how many other cases did not seek hospital treatment. The age incidence is in marked contrast with that of the Philippines and Thailand diseases in which frank bleeding was a prominent feature and where mostly young children were affected with case mortality of about 10 percent. Nelson reported splenomegaly, hepatomegaly and abdominal pain in Thailand. It is clear that Singapore Haemorrhagic Fever is quite a different disease, and it should be pointed out also that it is different from Korean Haemorrhagic Fever in which a renal syndrome was involved.

About 80% of the cases occurred in the urban and suburban areas and most of them in the built up sections.

The evidence suggests strongly that if a mosquito vector was involved in the haemorrhagic fever outbreak, it must have been an urban variety. Entomological studies initiated in October 1960 showed that Aedes aegypti were common in the urban area being found in more than 50% of the houses visited. Figure 2 lists the common species that were found. Attention is drawn to the fact that although Culex fatigans and Aedes albopictus were commonly found in both urban and rural areas, the distribution of the cases suggests that

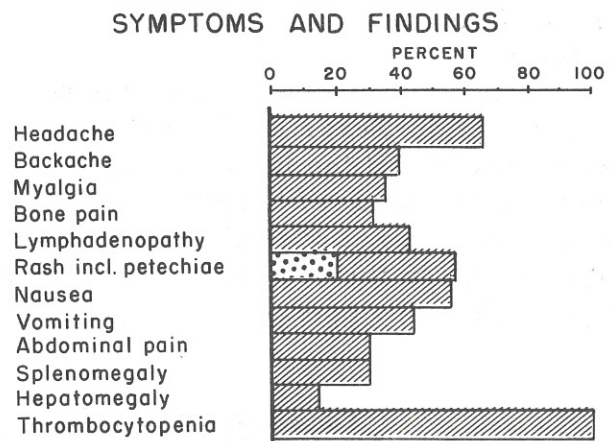


Fig. 1. Clinical features in 79 cases of Singapore Haemorrhagic Fever.

Aedes aegypti was the only species that could be incriminated as the vector of Singapore Haemorrhagic Fever.

Virus isolations from mosquito pools were attempted by inoculation of infant mice, 15 pools of Aedes aegypti having been processed so far. Four of these pools demonstrate possible presence of dengue related viruses in that over 50% of surviving mice were immune to intracerebral challenge by adult adapted dengue type 1 virus. Blind passage is being continued.

In terms of severity Singapore Haemorrhagic Fever stands between dengue fever and the haemorrhagic fevers of Thailand and the Philippines; what factor causes the difference in severity is unknown. Perhaps it is due to a difference in the virulence of the viruses for which a suitable virulence test is yet to be developed.

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#### Clostridium Perfringens Food Poisoning - Philadelphia, Pennsylvania

Morbidity and Mortality Weekly Report, U. S. DHEW PHS 11(48): 378-379, December 7, 1962.

On the evening of October 20, 1962, 140 children and 15 employees of a city welfare center became ill with severe diarrhea and abdominal pain, but little nausea or vomiting. The suspect meal, a noon dinner, was consumed by 170 persons. It consisted of roast beef, gravy, vegetables, and beverage. Symptoms developed between 8 and 12 hours after eating. Clostridium perfringens organisms in large numbers were isolated from both the roast beef and the gravy; none were isolated from the vegetables.

The roast beef and gravy had been prepared the day previous to the meal and allowed to cool in open trays without refrigeration for approximately 22 hours. A few hours before serving, the meat and gravy had been warmed separately at low temperatures in large pans.  
(Reported by: Chief, Veterinary Public Health Section, Philadelphia Department of Public Health, and Chief, Veterinary Public Health Section, Pennsylvania State Department of Health.)

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#### COMMON MOSQUITO SPECIES IN SINGAPORE

URBAN	Culex fatigans
	Aedes aegypti
	Aedes albopictus
SUBURBAN	Culex fatigans
	Aedes albopictus
	Anopheles vagus
AND	Culex gelidus
RURAL	Culex tritaeniorhynchus
	Mansonia uniformis

Fig. 2. Common mosquito species found in Singapore.



Seat Belt Advertising

"Initiate Joint Action to Eliminate Unethical Seat Belt Advertising,"  
Traffic Safety 62(3): 24, March 1963.

A code of ethical marketing practices for advertising and selling automotive seat belts has been promulgated by the National Better Business Bureau and the American Seat Belt Council.

The announcement was made jointly by Kenneth B. Willson, president of the National Better Business Bureau, and Charles H. Pulley, president of the American Seat Belt Council, which requested NBBB to undertake preparation and administration of the program.

"This is a most unusual step for an infant industry," said Willson. "That this industry is seeking to eliminate unethical marketing practices at the very outset makes the objective all the more commendable."

The 21-point program is designed to eliminate misleading and improper marketing practices. It applies to labeling, packaging, and advertising in all media and promotional or sales presentations, oral or in print, at all levels from manufacturer to dealer. The code will be sent to more than 900 Chambers of Commerce in the U. S., to 120 affiliated local Better Business Bureaus, to safety organizations, to members of the American Seat Belt Council, to advertising media, and to seat belt dealers and manufacturers throughout the country.

Pulley, president of ASBC, stated that "it is the sincere hope of the members of our association that voluntary acceptance of these recommendations by all concerned will prevent erosion of public trust in the credibility of seat belt advertising and selling which, in turn, will help speed universal acceptance of these vital safety devices."

The National Better Business Bureau announced that an implementation of the program has been set in motion in cooperation with the American Seat Belt Council. It includes a review of seat belt advertising for compliance with the standards and the investigation of complaints alleging violations of the code, including product testing, where necessary.

In scope, the code covers single occupancy lap-type seat belt assemblies, lap-type belt assemblies with shoulder harnesses, shoulder-type seat belts, and any children's restraining devices intended for installation in motor vehicles.

Highlights of the recommendations include requirement for substantiation of claims, restrictions on the use of the ASBC certification seal, clarification of warranties, avoidance of phony "list" prices, elimination of false claims of approval by government and civil authorities, and strict compliance with state specifications.

Copies of the code may be obtained through NBBB offices at 230 Park Avenue, New York 17, N. Y., or ASBC offices at 271 North Avenue, New Rochelle, N. Y.

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"Swimming-Pool Elbow" and "Fish-Tank Finger"

Water Newsletter 5(1): 2, 7 January 1963.

Researchers are finding that many un-disinfected swimming pools and fish tanks, particularly those in which water is constantly recirculated and kept at temperatures favorable for the growth of bacteria, constitute giant cultures that can cause unsightly but not painful infections of cuts and bruises. The germs, which are close kin to the tuberculosis bacillus, seem to thrive at around 80° F., which is within the temperature range of elbows and hands. A recent outbreak in Glenwood, Colorado, was traced to the community swimming pool, which was found to have the necessary requisites: warm (82° F.) water, no disinfection, and rough chafe-causing sides.

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A Brief Survey of Parasitic Helminths in South Laos and Cambodia With a Comparison to the State in Thailand

J. Ito and S. Jatanasen, Japanese J Med Sci & Biol 14(5/6): 257-262, December 1961. Abstract: Trop Dis Bull 59(10): 985, October 1962.

In 1960 a survey was made along the Mekong River basin in Southern Laos and Cambodia in order to establish the presence of a snail host of Schistosoma japonicum. The snails found are listed; no Oncomelania were seen. Of 1,514 people tested with an intradermal antigen for S. japonicum, only 3 were positive and it was considered that these were false reactions. The stools of 292 people were examined. The incidence of hookworm was especially high in Cambodia (60-70% in some areas) but Ascaris and hookworm infection were prevalent throughout both territories. Infection with liver fluke, Opisthorchis viverrini, was common (5.6-25.6%) in Southern Laos, but was not detected in Cambodia.

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Isolation of Brucella Suis from Air of Slaughterhouse

M. H. Harris, S. L. Hendricks, G. W. Gorman, and J. R. Held, Public Health Reports, PHS DHEW 77(7): 602-604, July 1962.

During an epidemic of brucellosis affecting 128 employees of a swine-slaughtering plant in Iowa, 300 swab samples were taken from surfaces, and a total of 480 cubic feet of air was sampled by 3 sampling devices. All samples were taken during plant operations in 1 week of February 1960. Despite the heavy overgrowth of saprophytic organisms on the mediums containing antibiotics, Brucella was recovered in 10 cubic feet of air from a slit sampler,



and another Brucella isolation was made from a settling plate. The suspect Brucella isolates were biochemically and serologically identified as B. suis. The virulence of both strains was demonstrated in rabbits and guinea pigs.

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### Trypanosomiasis in Northern Nigeria

Ministry of Health. Sleeping Sickness Service: Annual Report for 1961.  
Trypanosomiasis, Trop Dis Bull 59(11): 1040-1041, November 1962.

In Northern Nigeria, nearly 1,750,000 people were examined for trypanosomiasis and 0.06% were found infected. Benue Province remains most heavily infected, providing 38.3% of the cases; the number of new cases in this province was greater and relapses fewer compared with 1960. Kano Province this year provided only 6.1% of the total cases, a decline from 20.1% over the previous 5 years.

Increasing use is being made of insecticides in control. In Niger Province insecticides have been used in river systems which could not be isolated from sources of the tsetse fly, in an attempt to control the fly temporarily. Mango trees and plantations have become a habitat of Glossina tachinoides in Bauchi Province, and the planting and pruning of these trees within 5 miles of Bauchi town is controlled. In several districts a rising incidence of human trypanosomiasis has been controlled by mass treatment in association with insecticidal spraying at points of fly-man contact.

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### Poison Prevention Week

U.S. DHEW, PHS, Public Health Reports 78(2): 172-173, February 1963.

The National Planning Council for National Poison Prevention Week, representing medical and allied professions, industrial and civic organizations, and government agencies, conducted a campaign 17-23 March 1963, to make known the following basic rules for the storage, handling, and disposal of potentially toxic substances in the home:

1. Keep household products and medicines out of the reach and sight of children.
2. Store medicines separately from other household products. Keep all these items in original containers, never in cups, glasses, or soft-drink bottles.
3. Be sure that all products are properly labeled and read the label before using.
4. Never give or take medicine in the dark.
5. Since children imitate adults, avoid taking medications in their presence.
6. Refer to medicines by their proper names. Never call them candies.
7. Clean out medicine cabinets periodically. Get rid of old medicines by flushing them down the drain and rinsing the container with water before discarding it.



Did you know:

That from 13 July 1918, to 14 December 1918, there had been reported by Navy Medical Department Form F cards 80,683 cases of influenza, with 4,009 deaths (cards Forms N)? The case incidence rate was therefore, 13.14%; the death rate for the entire epidemic was 6.53 per 1,000 and the case fatality rate 4.96%.

In connection with influenza, it had been observed at the Naval Hospital, Washington, D. C., the Naval Hospital, Great Lakes, Ill., and the Georgetown Hospital, Washington, D. C., that no case of influenza developed in the surgical wards during the whole course of the epidemic. (1)

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That in 1962, rabies was reported in Alabama for the first time in history? (2)

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That Japan has recorded no canine rabies since 1956?

Japan had 876 cases in 1950, and only 7 cases in 1956. Over the last three years, the Department of Veterinary Laboratory Medicine has examined more than 275 canine specimens for rabies from Armed Forces veterinarians in Japan. All were negative. (3)

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That in a written answer in the House of Commons on 25 Oct 1962, the Secretary for Technical Cooperation, Mr. D. Vosper, stated that an important advance towards the establishment of a system of effective international organizations for the control of locusts had been made when a covenant for the establishment of a Desert Control Organization for Eastern Africa was signed on August 20 by Ethiopia, Somalia, Kenya, Uganda, and Tanganyika? (4)

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That an undescribed species of stonefly (Plecoptera) of the genus Capnia, taken in Lake Tahoe, California and Nevada, appears to pass its entire life history at depths of nearly 200 to at least 264 feet?

While the recent discovery of stonefly nymphs in a moist, terrestrial habitat in New Zealand and in Argentina is a matter of much interest, the



discovery of this strictly aquatic species is even more noteworthy. The small order Plecoptera shows a remarkable ability to adapt to a very wide range of environmental conditions. (5)

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That there were more dogs and fewer cats in 1961 than in 1959?

Figures reported to the Pet Food Institute by the Market Research Corporation of America showed that the dog population rose from 23.8 million in 1959 to 24.13 million in 1961. The cat population declined from 25.5 million in 1959 to 22.05 million in 1961. (6)

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5. Science, American Association for the Advancement of Science, Vol. 139, No. 3554, "A Stonefly Aquatic in the Adult Stage," p. 484, 8 Feb 1963.
6. CDC Veterinary Public Health Notes, USDHEW, CDC, Atlanta, Ga. p. 16, Jan 1963.

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#### Radioactive Well-Logging

U.S. DHEW, PHS, Public Health Reports 78(2): 174, February 1963.

Beginning with radioactive well-logging field stations, the Oklahoma State Department of Health has launched a comprehensive industrial inspection program. Inspections cover operating, handling, and safety procedures, personnel monitoring, labeling and posting, and storage facilities. Comparing instructions in company operations manuals with field practices has shown that sources, trucks, and storage containers are seldom labeled for radioactivity, and exposure levels outside controlled areas are frequently 10 to 20 times higher than the 2 mr. per hour set forth in the AEC regulations or in the company manual. At one shop investigators found sources of radium (25 mg.) and radium-beryllium (400 mg.) unlabeled. A neutron logging tool containing 400 mg. of Ra-Be had a surface intensity exceeding 3,000 mr./hr. The truck used to transport logging sources to the field was not labeled and provided no shielding from the gamma and neutron radiation of the tool. Exposure levels on the truck exceeded 2,000 mr./hr.

**RESERVE****SECTION**

Uniform Allowances  
(continued)

(c) Substantiation of Eligibility by Officer. — The Table of Naval Reserve Officers' Uniform Allowance Claim Procedures shown indicates to whom and how the officer concerned shall submit his claim and the necessary documents required to substantiate such claim.

(3) Additional Active Duty Uniform Allowance. An officer of the Naval Reserve is entitled to a sum not to exceed \$100 as reimbursement for additional uniforms and equipment for performing, or having performed, active duty or active duty for training for a continuous period in excess of 90 days' duration on or after 25 June 1950 at a location where uniforms are required to be worn. Entitlement to this additional active duty allowance is determined as follows:

(a) Eligibility. — Officers of the Naval Reserve entering on active duty or active duty for training for a continuous period in excess of 90 days' duration on or after 25 June 1950 at a location where uniforms are required to be worn are entitled, for each time of such entry or re-entry, to a sum of \$100 provided one of the following conditions is met:

1. The period of active duty or active duty for training is the first such period since appointment as an officer in the Naval Reserve, and the officer concerned has not received, under any provision of law, an initial uniform allowance or gratuity in excess of \$200 incident to, or within a period of two years prior to entering on, that particular tour of active duty or active duty for training; or

2. The period of active duty or active duty for training is the first such period since appointment as an officer in the Naval Reserve following a termination of active duty in another Branch of the Armed Forces which required a different uniform and the officer concerned has not received, under any provision of law, an initial uniform allowance or gratuity in excess of \$200 incident to the particular tour of active duty or active duty for training on which eligibility is being based, regardless of the fact that he may or may not have received an initial uniform allowance or gratuity of \$200 or less or an additional active duty uniform allowance of \$100 at any time under any provision of law for a prior period of active duty or active duty for training in a Reserve Component of another Branch of the Armed Forces which required a different uniform; or

3. The period of active duty or active duty for training is the second such period after appointment as an officer in the Naval Reserve or any succeeding such period thereafter, and provided a period of at least two years has



TABLE OF NAVAL RESERVE OFFICERS' UNIFORM ALLOWANCE CLAIM PROCEDURES

Type Uniform Allowance	Naval Reserve officers eligible	Amount	Qualifications	Forms and copies of orders required*	To whom submitted	By whom paid
<u>Initial</u>	Officers attending or appointed in classes at U. S. Naval Schools Command, Naval Station, Newport, Rhode Island	See NavCompt Manual par. 044145-1.a.	Art. H-1901(2)	Form NAVPERS-3094 in triplicate. Three certified copies of orders to active duty as an officer.	Commanding Officer, U. S. Naval Schools Command, U. S. Naval Station, Newport, Rhode Island	Disbursing officer handling accounts**
	Newly appointed officers of the Navy Nurse Corps Reserve, with no prior military service, reporting to the Navy Nurse Indoctrination Center, Naval Hospital, St. Albans, Long Island, New York	See NavCompt Manual par. 044145-1.a.	Art. H-1901(2)	Form NAVPERS-3094 in triplicate. Three certified copies of orders to active duty as an officer.	Commanding Officer, Navy Nurse Indoctrination Center, Naval Hospital, St. Albans, Long Island, New York	Disbursing officer handling accounts**
	Officers other than those attending or appointed in classes at U. S. Naval Schools Command, Naval Station, Newport, Rhode Island, and newly appointed officers of the Navy Nurse Corps Reserve reporting to the Navy Nurse Indoctrination Center, Naval Hospital, St. Albans, Long Island, New York	See NavCompt Manual par. 044145-1.a.	Art. H-1901(2)	Form NAVPERS-3095 in duplicate. One certified and fully endorsed copy of orders to active duty or active duty for training as an officer, if qualifying by this service.	Reserve Officer Recording Activity, Omaha, Nebraska	CO, U. S. Navy Finance Center, Cleveland 14, Ohio
<u>Additional Active Duty</u>	Officers on active duty who reported on or after 25 June 1950	\$100	Art. H-1901(3)	Original and two certified copies of orders to active duty, with endorsements. Original and two copies of certification. (See par. (3)(b).)	Commanding Officer	Disbursing officer handling accounts**
	Officers not on active duty who entered on active duty on or after 25 June 1950	\$100	Art. H-1901(3)	Form NAVPERS-3096 in duplicate. One certified copy of orders to active duty, with all endorsements.	CO, U. S. Navy Finance Center, Cleveland 14, Ohio	CO, U. S. Navy Finance Center, Cleveland 14, Ohio
<u>Maintenance</u>	Officers completing not less than 4 years' service since last uniform entitlement date	\$50	Art. H-1901(4)	Form NAVPERS-3091 in duplicate	Reserve Officer Performance Recording Activity, Omaha, Nebraska	CO, U. S. Navy Finance Center, Cleveland 14, Ohio

\*Instructions printed on claim forms conflicting with the provisions above shall be disregarded.

\*\*Copies of orders with the endorsement that the initial uniform allowance or the additional active-duty uniform allowance has been paid are not required by either BuPers or the Reserve Officer Recording Activity, Omaha, Nebraska. One copy of the Paid Voucher (with Form NavPers-3094 attached if applicable) will be forwarded to the CO, U. S. Navy Finance Center, Cleveland, Ohio, by the Disbursing Office effecting settlement of the claim.

elapsed since the officer concerned previously completed a period of active duty or active duty for training in excess of 90 days.

(to be continued)

BuPers Manual—Part H

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### ACDUTRA Pay Speeded—if You Follow Rules

It won't be long, now, before the annual ACDUTRA rush is on. You will speed payment of your ACDUTRA pay and allowances if you follow these suggestions:

Copies of Orders—Reservists sometimes lack the proper number of certified copies of orders, or have incomplete orders.

All Reservists are required to have the original and eight certified copies of orders in their possession, complete with all endorsements, including the signature of the Reservist acknowledging receipt of orders, when reporting for ACDUTRA.

Don't detach any of the copies of the orders you receive unless you have more than the minimum number required. If you submit fewer than the required number, the disbursing office may return the orders to you for the purpose of preparing additional copies yourself—or having them prepared by the personnel office.

Make sure you have all necessary endorsements completed before you submit your set of orders to the disbursing office.

Basic Allowance for Quarters (BAQ)—You can save yourself lots of time if you have your substantiating documents for BAQ completed and certified before you report for ACDUTRA.

Officers must file Dependency Certificate—Wife, or Child Under 21 Years, NavCompt Form 2040. In addition, the Dependency Certificate—Mother and/or Father, NavCompt Form 2040-1, is required when it is appropriate.

Enlisted Reservists must file Application for Dependents Allowance, NavPers Form 668.

Failure to have these forms completed and ready for submission when requested will hinder or delay payment of your BAQ. Whenever possible, obtain the necessary forms from your Naval Reserve Training Center, and have them completed there. —The Naval Reservist - NAVPERS 15653, Feb. 1963.

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POSTAGE AND FEES PAID  
NAVY DEPARTMENT

DEPARTMENT OF THE NAVY  
U. S. NAVAL MEDICAL SCHOOL  
NATIONAL NAVAL MEDICAL CENTER  
BETHESDA 14, MARYLAND  
OFFICIAL BUSINESS  
Permit No. 1048